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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,928	03/01/2002	Kazuo Fujibayashi	03500.016243	7120

5514 7590 04/22/2004

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EXAMINER

MEYER, DAVID C

ART UNIT PAPER NUMBER

2878

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/084,928

Applicant(s)

FUJIBAYASHI ET AL.

Examiner

David C. Meyer

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-23 and 25-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23, 25-33, 34/(23, 25-33), and 35-45 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 13, 14, and 34/(4, 13, 14) is/are rejected.
- 7) ☒ Claim(s) 3, 5, 7-12, 15-22, and 34/(5, 7-12, 15-22) is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka et al. ('Tanaka' EP 0730169A2). Tanaka discloses an optical system consisting of a transparent body that comprises curved reflecting surfaces. Tanaka states that the field of the invention relates to optical systems and image pickup devices suited to video cameras, still cameras, and copying machines.

Regarding claim 1, Fig. 2 in Tanaka depicts an imaging optical system comprising an image optical element 10 that includes a plurality of off-axial reflecting surfaces R3,R4,R5,R6 differing in the direction of emergence of a reference axis ray from one another and having curvatures (see page 8, lines 53-57) and an angle of field  $u_x, u_y$  (see page 9, lines 30-32).

Regarding claim 2, in the Summary of Invention, Tanaka discloses that the optical element can be constructed such that an entering reference axis and an exiting reference axis are parallel, parallel and opposite, or perpendicular (see page 6, lines 8-12).

### ***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 4, 13, 14, and 34/4,13,14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka.

Regarding claim 4, as stated in the rejection of claim 1 under 35 U.S.C. 102(b), Tanaka discloses an image optical element 10 that includes a plurality of off-axial reflecting surfaces R3,R4,R5,R6 differing in the direction of emergence of a reference axis ray from one another and having curvatures (see page 8, lines 53-57) and an angle of field  $u_x, u_y$  (see page 9, lines 30-32). The surface R10 of a "CCD or like image pickup element" is shown in Fig. 2. Tanaka also discloses that the invention relates to optical elements suited to copying machines (see page 2, lines 7-10). Tanaka lacks the recited original supporting table. Furthermore, Tanaka does not disclose that the image pickup element is a line sensor.

Inasmuch as an original supporting table and a line sensor-type image pickup element are well known components of copying machines, and inasmuch as the disclosed environment of use of the invention of Tanaka is a copying machine, it would have been obvious to one of ordinary skill in the art at the time of invention to provide an original supporting table and a line sensor-type image pickup device for use with the image optical element 10 in order to achieve a "compact form of the entirety of the optical system" (see page 2, lines 7-10).

Regarding claim 13, Fig. 14 in Tanaka depicts a hollow core optical element that has an internal medium constituted of air (see page 24, lines 43-44).

Regarding claim 14, Figs. 11A and 11B in Tanaka depict a transparent glass optical element 10 (see page 22, lines 37-38).

Regarding claim 34/4,13,14, Tanaka discloses that optical element 10 may be constituted of transparent glass. Hence, this would not preclude arrangements in which a color image is introduced to the optical element for transmission to the image pickup element.

***Allowable Subject Matter***

5. Claims 3, 5, 7-12, 15-22, and 34/5,7-12,15-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 3, the prior art of record does not disclose or fairly suggest the invention as claimed wherein, in addition to the other claimed features, a stop is located between intersecting off-axial surfaces of the imaging optical element.

Regarding claim 5 (claims 7-9 and 15-21 depend from claim 5), the prior art of record does not disclose or fairly suggest the invention as claimed wherein, in addition to the other claimed features, the bending direction of the reference ray on each off-axial reflecting surface of the imaging optical element is perpendicular to the line direction of the line sensor.

Regarding claims 10-12, the prior art of record does not disclose or fairly suggest the invention as claimed wherein, in addition to the other claimed features, image information is not intermediately imaged in the imaging optical element, but is directly formed on the line sensor.

Regarding claim 22, the prior art of record does not disclose or fairly suggest the invention as claimed wherein, in addition to the other claimed features, the effective beam width on the exit surface of the optical element in a direction perpendicular to the line sensor is less than the effective beam width in a direction in line with the direction of the line sensor.

Claim 34/5,7-12,15-22 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 23, 25-33, 34/23,25-33, and 35-44 are allowed.

Regarding claims 23, 25-28, and 34/23,25-28, the prior art of record does not disclose or fairly suggest the invention as claimed wherein, in addition to the other claimed features, a reflecting mirror is provided in the image reading apparatus, the reflecting mirror and the imaging optical element reflecting the reference axis ray a plurality of times.

Regarding claims 29-33 and 34/29-33, reasons for allowance were provided in a previous Office Action.

Claims 35-44 correspond to old claims 3, 7-9, 11, 12, and 17-21, rewritten in independent form. As such, they are allowed.

### ***Response to Arguments***

7. Applicant's arguments, see After-Final Amendment, filed March 2, 2004, with respect to the rejection(s) of claim(s) 1, 4, and 23 under 35 U.S.C. 112, claims 1, 2, 4, 5, 10, 13, 15, 16, and 22 under 35 U.S.C. 102(b), and claims 14, 23, 25, and 26 under 35

U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Tanaka et al. (EP 0 730 169 A2).

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nanba (US 6,163,400) discloses a plurality of optical units each having a plurality of curved reflecting surfaces. The optical units are applied in an optical system having an image pickup. Sunaga (US 6,637,899 B2) discloses an optical element for use in an imaging system such as a camera or copying machine. The optical element has a plurality of off-axial reflecting surfaces. Sasaki (US 2003/0035232 A1) discloses a plurality of curved mirrors for conveying image information to a screen.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Meyer whose telephone number is 571-272-2442. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DCM

March 17, 2004

  
DAVID PORTA  
SUPERVISORY PATENT EXAMINER  
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